Cloverdale

Commitments to meeting community greenhouse gas reduction goals.

5.1 Cloverdale

This section presents the community greenhouse gas (GHG) emissions profile specific to Cloverdale and the measures that the City of Cloverdale will implement, with the support of the RCPA and other regional entities, as part of the regional approach to reducing GHG emissions.

5.1.1 Community Summary

The City of Cloverdale is an attractive small town community that is home to many small local businesses, a thriving performing arts center, the annual Cloverdale Citrus Fair, and ample recreational opportunities. Cloverdale is the northernmost city in Sonoma County, located approximately 3 miles south of the Mendocino County-Sonoma County border and 30 miles north of Santa Rosa. The City's location along the major transportation corridors of Highway 101 and Highway 128 offers local economic development opportunities set in the picturesque Alexander Valley wine region. With proximity to urban centers (Santa Rosa, San Francisco, and Arcata/Eureka), Cloverdale is evolving as a smart-growth city with small town charm.

Demographics

The City spans 2.7 square miles and had a population of 8,618 as of the 2010 census. By 2020 the population is expected to increase over 9% to 9,425, while employment is expected to increase by 8%. Cloverdale's demographic composition in 2010 was 75% White, 0.6% African American, 1.1% Native American, 1.1% Asian, 0.1% Pacific Islander, 17.8% from other races, and 4% from two or more races. Persons of Hispanic or Latino origin composed 33% of the population in 2010.

As shown in Table 5.1-1, Cloverdale is expected to experience steady growth in population, housing, and jobs in the future.

Table 5.1-1. Cloverdale Socioeconomic Data

	Actual		Projected			
	1990	2010	2015	2020	2040	2050
Population	4,924	8,618	9,015	9,425	10,952	11,651
Housing	1,868	3,249	3,432	3,625	4,230	4,495
Employment	2,455	3,012	3,624	3,928	4,324	4,492

Socioeconomic data were derived from the Sonoma County Transportation Authority travel demand model and incorporate input from the City based on its internal planning forecasts.

According to 2010 Census data, the majority of housing in the City of Cloverdale is owner-occupied with 66% of all housing units owned, and about 34% of housing units renter-occupied.

Energy and Water Use

Compared to households in the county as a whole, Cloverdale households use less electricity but more natural gas and water. They also use less electricity, natural gas, and water than households statewide.

Table 5.1-2. Cloverdale, County, and State 2010 Average Energy and Water Use (per household, per year)

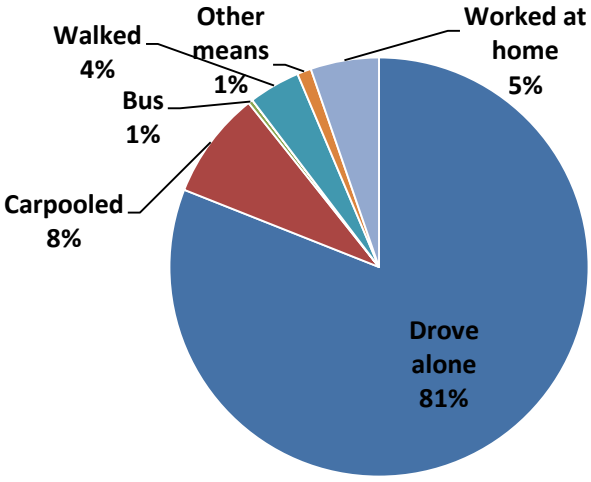
	Cloverdale	County	State1
Electricity (kWh)	6,652	7,042	9,320
Natural Gas (Therms)	441	413	512
Water Use (Gallons)	88,256	75,810	107,869

Sources:
City Data: provided by PG&E (energy) and by the City of Cloverdale (water).
County Data: provided by PG&E (energy) and the cities or their Urban Water Management Plans (water).
State Data: U.S. Energy Information Administration 2009, U.S. Geological Survey 2014, California Department of Finance 2015.
kWh = kilowatt hours

Transportation Commute Modes

In the inventory year 2010, most Cloverdale residents (81%) drove alone to work, with only 8% carpooling. This is typical and similar to the other communities in Sonoma County. Cloverdale is the northernmost city in the county and many people have to drive out of the City to work in Santa Rosa to the south, Ukiah to the north, or elsewhere in or out of the county. With the average trip to work for residents of Cloverdale taking 25.2 minutes, riding a bus is not a viable option due to time constraints as well as limited access and routes (U.S. Census Bureau 2014).

Figure 5.1-1. Modes to Work in Cloverdale in 2010



Source: U.S. Census Bureau 2014: American Community Survey 2006–2010

5.1.2 Cloverdale's Existing Actions to Reduce Greenhouse Gas Emissions

Cloverdale has already taken a number of steps to reduce energy use, promote renewable energy use, and other actions that have been helping to reduce greenhouse gas (GHG) emissions. The City has adopted the following ordinances and General Plan policies that help to reduce GHG emissions and will support implementation of the GHG reduction measures in CA2020.

- Building Energy
    - The City has adopted the California Green Building Standards Code, making the Tier 1 Voluntary measures for residential and non-residential structures mandatory requirements.
    - General Plan Policy 8-2: Use, support, and encourage energy and resource efficient methods in private construction. Study and develop ordinances and incentives to encourage energy efficient transportation, locally generated solar and alternative energy power sources, and green building methods for private buildings and projects. The City of Cloverdale Building Department has ongoing efforts to support solar power projects, locally generated solar and alternative energy power sources, and green building methods for private buildings and projects.
    - General Plan Policy CDO 8-1: Use energy and resource efficient methods in daily City operation. Where feasible, use energy efficient transportation, locally generated solar and alternative power sources, and green building methods for City buildings. This policy is ongoing. The City has not constructed or remodeled any City buildings.
- Land Use and Transportation
    - General Plan Policy LU 3-1: Develop an Urban Growth Boundary [UGB]. Protects important farmlands and open space from urban development (UGB Ordinance). City voters adopted Cloverdale's Urban Growth Boundary in 2010.
    - General Plan Policy CE 4-3: Support local, countywide, and regional bus service. Maintain and encourage use of the Cloverdale City bus by maintaining schedules that serve the community and by use of distinctive vehicles to bring visibility to the service. The City continues to support the use of public transportation in Cloverdale. The City operates a shuttle bus that is accessible to all residents of the City.
    - General Plan Policy CE 3-1: Pedestrian and bike pathways. Provide an extensive network of pedestrian and bicycle pathways to support community health and provide a safe alternative to automobile use. Integrate routes with transit stops. The Sonoma County Transportation Authority (SCTA), in conjunction with the City, created a pedestrian and bike master plan for Cloverdale.
    - General Plan Policy CE 4-1: Participate in efforts to establish rail service on the SMART right of way. Encourage passage of rail bonds and develop appropriate land uses that will support rail ridership. The City supported the passage of the ballot measures to support

the SMART Train. In anticipation of the SMART Train having a stop in Cloverdale, properties around the train station have been zoned for Transit Oriented Development.

  - General Plan Policy CDO 3-8: SMART station area plan. Develop Transit Oriented Development design plan before or concurrent with the Transit Oriented Development Specific Plan. The City adopted a Station Area Plan in 2010 that focuses on development around the SMART Train Station.
  - Trip Reduction Ordinance: Municipal Code Chapter 10.54. Requires employers within the City with 100 or more employees at individual job sites to disseminate trip reduction information on alternative transportation in addition to telecommuting, compressed work weeks, and flexible hours.
  - General Plan Policy CE-4-4: Encourage ridesharing to reduce commute trips. Coordinate with regional ridesharing plans. The City has worked with regional ridesharing plans to encourage residents and employees to use these programs.

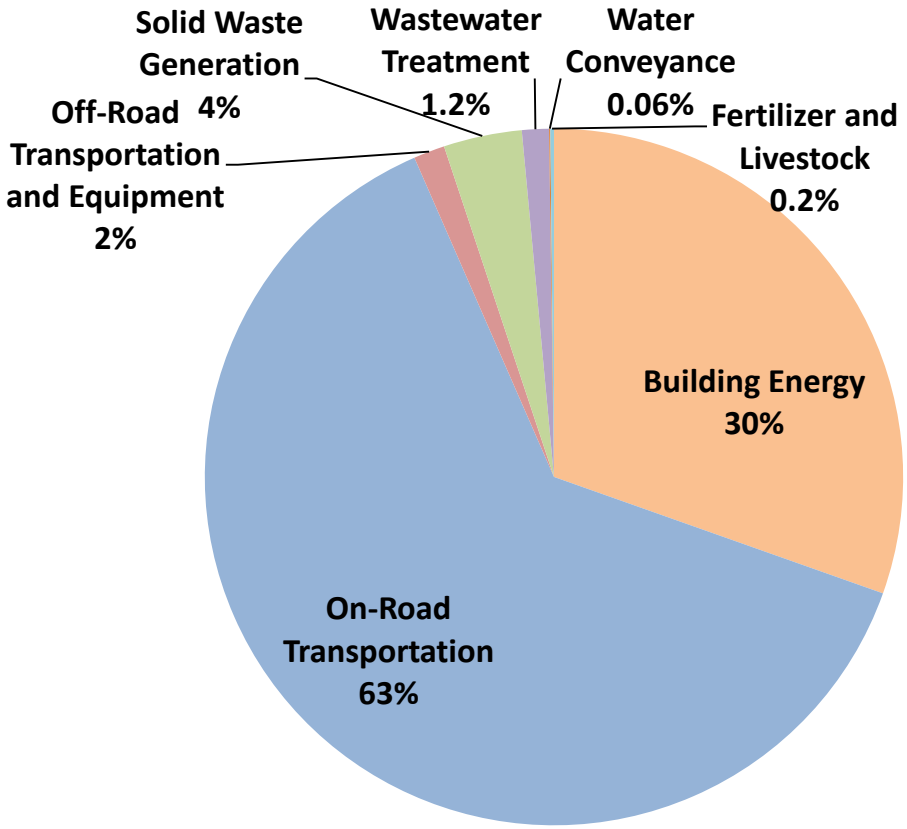
- Waste Minimization and Recycling
  - Recycled Products Purchasing: Municipal Code Chapter 3.08.090. Upgrade the City Wastewater Treatment Plan to provide tertiary treatment and provide new development with distribution systems for tertiary-treated water. The City adopted an updated Sewer System Master Plan in June, 2009.
- Water and Wastewater Efficiency
  - General Plan Policy LU 6-1: Ensure adequate water and waste water capacities. Upgrade the City Wastewater Treatment Plan to provide tertiary treatment and provide new development with distribution systems for tertiary-treated water. The City adopted an updated Sewer System Master Plan in June, 2009.
  - Water Efficient Landscape Ordinance: Municipal Code Chapter 15.30
- Agriculture
  - General Plan Policy LU 3-3: Protect Prime Farmland, Unique Farmland, and Farmland of Statewide Importance from urban development. Retain these farmland designations as Conservation Features under the Urban Growth Boundary Ordinance. City voters adopted the Urban Growth Boundary in 2xxx.
- Urban Forestry and Natural Areas
  - General Plan Policy CDO 6-2: Protect distinctive natural vegetation. Develop and urban forest/plan street tree plan with a management strategy for maintaining existing and newly planted trees, including best practice provisions for installation, maintenance, and succession planning.
  - General Plan Policy CDO 6-6: Prepare and urban forest/street tree plan. Design a program for new trees to be installed with development and a plan for retrofit in areas where development or streets were installed without trees.

- General Plan Policy CDO 6-1: Maintain and expand the tree canopy within and outside the developed areas of the City. Develop and urban forest/plan street tree plan with a management strategy for maintaining existing and newly planted trees, including best practice provisions for installation, maintenance, and succession planning.

- General
  - General Plan Policy CDO 8-3: Inventory and Reduce Greenhouse Gas Emissions. Work with the Sonoma County Air Pollution Control District and California Air Resources Board to prepare a Climate Action Plan inventorying current GHG emissions, emissions from 1990, and projected emissions for 2020.

5.1.3 Greenhouse Gas Inventory and Forecast

Figure 5.1-2. Cloverdale 2010 Community GHG Inventory by Sector



Cloverdale's inventory is similar to other cities in the county and state. The majority of the GHG emissions are from the transportation sector, from the combustion of fossil fuels in personal and light-duty vehicles. The next largest sector is building energy, which includes emissions related to energy consumed for heating, cooling, lighting, and cooking in the residential, commercial, and industrial sectors. Residential uses account for most (69%) of the building energy emissions in

Cloverdale. Commercial uses account for 31% of building energy emissions. The other categories of emissions are much smaller in comparison to building energy and on-road transportation.

In Cloverdale, total GHG emissions generated by community activities in 2010 were 59,040 metric tons of carbon dioxide equivalent ($MTCO_2e$), which is approximately 2% of total countywide GHG emissions in the same year.[1] This is a 3% increase from estimated 1990 emissions, which were 57,330 $MTCO_2e$. Table 5.1-3 shows the 1990 backcast, the 2010 inventory and business-as-usual (BAU) forecasts for 2015, 2020, 2040 and 2050 for the City of Cloverdale.

[1] Sonoma County total GHG emissions in 2010 were 2.6 million metric tons of CO_2e.

Table 5.1-3. Cloverdale Community GHG Backcast, Inventory, and Forecasts

Sector	1990 Backcast		2010 Inventory		2015 Forecast		2020 Forecast		2040 Forecast		2050 Forecast	
Building Energy	12,920	23%	17,990	30%	20,880	30%	22,250	30%	25,450	27%	26,840	29%
On-road Transportation	36,510	64%	37,270	63%	44,160	64%	46,380	63%	61,310	66%	60,200	64%
Off-road Transportation and Equipment	610	1%	860	1%	1,090	2%	1,320	2%	2,560	3%	2,690	3%
Solid Waste Generation	6,550	11%	2,140	4%	2,390	3%	2,540	3%	2,880	3%	3,030	3%
Wastewater Treatment	420	1%	740	1.3%	770	1%	810	1%	940	1%	1,000	1%
Water Conveyance	320	1%	30	0.1%	40	0%	40	0%	40	0%	50	0%
Total	**57,330**	**100%**	**59,040**	**100%**	**69,320**	**100%**	**73,340**	**100%**	**93,170**	**100%**	**93,790**	**100%**
Per-Capita Emissions	**11.6**		**6.9**		**7.7**		**7.8**		**8.5**		**8.1**	

5.1.4 Greenhouse Gas Reduction Goal and Measures

The City of Cloverdale joins the other Sonoma County communities to support the regional GHG emissions reduction target of 25% below 1990 countywide emissions by 2020 through adoption of 21 local greenhouse gas reduction measures. The City's GHG emissions under 2020 business-as-usual (BAU) conditions (in absence of state, regional, and local reduction measures) would be approximately 73,340 $MTCO_2e$. The City's local GHG reduction measures, in combination with state and regional measures, would reduce the City's GHG emissions in 2020 to 50,140 $MTCO_2e$, which would be a reduction of approximately 32% compared to 2020 BAU conditions. The City will achieve these reductions through a combination of state (70%), regional (21%), and local measures (9%) that are technologically feasible and cost-effective per Assembly Bill (AB) 32. With the reduction measures in CA2020, per-capita emissions in Cloverdale will be 5.3 $MTCO_2e$ per person, a 45% reduction in per capita emissions compared to 1990.

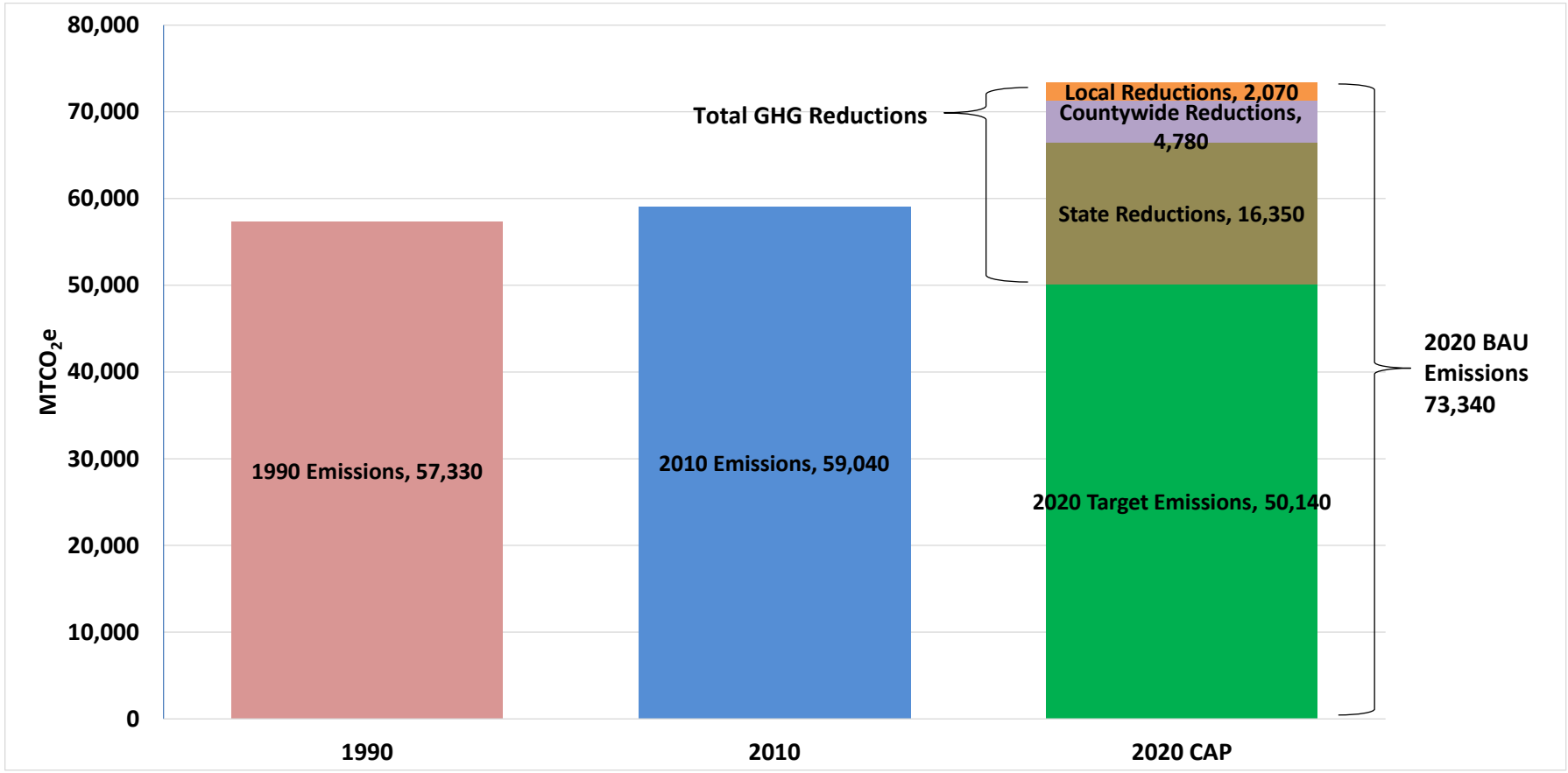
Table 5.1-4. Cloverdale 2020 GHG BAU Emissions, Reductions, and CAP Emissions

Sector	2020 BAU	2020 Reductions				2020 CAP Emissions	% Reduction from BAU
	Forecast	State	County-wide	Local	Total		
Building Energy	22,250	5,290	1,630	980	7,900	14,350	36%
On-road Transportation	46,380	10,940	1,230	920	13,090	33,290	28%
Off-road Transportation and Equipment	1,320	120	-	-	120	1,200	9%
Solid Waste Generation	2,540	-	1,910	-	1,910	630	75%
Water Conveyance	40	-	10	10	20	20	50%
Wastewater Treatment	810	-	-	160	160	650	20%
Total Emissions	**73,340**	**16,350**	**4,780**	**2,070**	**23,200**	**50,140**	**32%**
		70%	**21%**	**9%**			

Values may not sum due to rounding.

Figure 5.1-3 shows Cloverdale's 1990 and 2010 GHG emissions total, 2020 BAU emissions forecast total, and the total emissions remaining after implementation of the City's reduction measures. The contribution of state, regional, and local reductions are overlaid on the 2020 BAU emissions forecast total, representing the total emissions reductions achieved in 2020. Like the other communities, Cloverdale benefits greatly from the work the state and regional entities are committed to implementing on climate action. See Chapter 4 for more information on state and regional actions.

Figure 5.1-3. Cloverdale 1990, 2010, and 2020 GHG Emissions; 2020 State and Local Reductions



Greenhouse Gas Reduction Measures

As shown in Table 5.1-5, the City of Cloverdale will achieve its reduction goal through a combination of state, regional, and local measures. State reduction measures are implemented through state law, including some that require action by the City to comply with state mandates (e.g., Title 24 energy efficiency measures). State measure reductions total 16,350 $MTCO_2e$, including the Pavley vehicle fuel efficiency standards, Title 24 building standards, the state's low carbon fuel standard, and the Renewables Portfolio Standard (RPS).

Regional measures will reduce emissions by 4,780 $MTCO_2e$ and will be implemented by regional entities, including the Regional Climate Protection Authority (RCPA), Sonoma County Water Agency (SCWA), County of Sonoma Energy and Sustainability Division (ESD), Sonoma County Transportation Authority (SCTA), and Sonoma Clean Power (SCP).

An additional reduction of 2,070 $MTCO_2e$ will be achieved through locally adopted measures relevant to the City of Cloverdale. The locally adopted measures, although not as high-achieving of GHG reductions as the state and regional measures, are important because they represent the actions that local communities can take directly. The communities have selected the local measures that best suit the needs of their community.

The three measures that will have the greatest impact in Cloverdale are, in order of importance, Measure 11-L1 (Senate Bill SB X7-7 - Water Conservation Act of 2009), Measure 8-L1 (Idling Ordinance), and Measure 2-L4 (Solar in Existing Non-Residential Buildings). These three measures, in addition to reducing GHG emissions, will save energy, improve air quality and public health in the City, and conserve natural resources. As the county and state continue to experience a historic drought, water conservation will remain an especially important co-benefit.

On the state level, the RPS and the Pavley measures have the greatest potential to reduce emissions in the City. Of the regional measures, the measures with the greatest impact include the Community Choice Aggregation (CCA) measure and the waste-to-energy measure.

Table 5.1-5 presents the individual GHG reduction measures that Cloverdale has selected for the CAP. For more information on the specifics of each measure, see Appendix C.

Solar Water and Wastewater Treatment Plants in Cloverdale

In 2014, Cloverdale approved a Power Purchase Agreement to finance solar panel arrays at the City's water and wastewater treatment plants. The City expects that the water and wastewater treatment plants will be supplied by 100% solar energy when the project is fully up and running.

Table 5.1-5. Cloverdale 2020 GHG Emissions Reductions by Measure

	2020 GHG
Goal 1: Increase Building Energy Efficiency	**1,365**
Measure 1-S1: Title 24 Standards for Commercial and Residential Buildings	540
Measure 1-S2: Lighting Efficiency and Toxics Reduction Act (AB1109)	452
Measure 1-S3: Industrial Boiler Efficiency	NA
Measure 1-R1: Community Energy Efficiency Retrofits for Existing Buildings	41
Measure 1-R2: Expand the Community Energy Efficiency Retrofits Program	331
Measure 1-L3: Shade Tree Planting ✓	1
Goal 2: Increase Renewable Energy Use	**5,905**
Measure 2-S1: Renewables Portfolio Standard	4,272
Measure 2-S2: Solar Water Heaters	24
Measure 2-R1: Community Choice Aggregation	1,236
Measure 2-L2: Solar in Existing Residential Building ✓	107
Measure 2-L4: Solar in Existing Non-Residential Buildings ✓	267
Goal 4: Reduce Travel Demand Through Focused Growth	**36**
Measure 4-L1: Mixed-Use Development in City Centers and Along Transit Corridors ✓	29
Measure 4-L2: Increase Transit Accessibility ✓	3
Measure 4-L3: Supporting Land Use Measures ✓	NQ
Measure 4-L4: Affordable Housing Linked to Transit ✓	4
Goal 5: Encourage a Shift Toward Low-Carbon Transportation Options	**1,416**
Measure 5-R1: Improve and Increase Transit Service	3
Measure 5-R2: Supporting Transit Measures	NQ
Measure 5-R3: Sonoma-Marin Area Rail Transit	NQ
Measure 5-R4: Trip Reduction Ordinance	185
Measure 5-R5: Supporting Measures for the Transportation Demand Management Program	NQ
Measure 5-R6: Reduced Transit Passes	171
Measure 5-R7: Alternative Travel Marketing & Optimize Online Service	137
Measure 5-R8: Safe Routes to School	394
Measure 5-R9: Car-sharing Program	NQ

✓ = Local Measure (otherwise State or Regional)	2020 GHG Reductions
Measure 5-R10: Bike Sharing Program	NQ
Measure 5-L1: Local Transportation Demand Management Program ✓	137
Measure 5-L2: Carpool-Incentives & Ride-Sharing Program ✓	247
Measure 5-L3: Guaranteed Ride Home ✓	NQ
Measure 5-L4: Supporting Bicycle/Pedestrian Measures ✓	NQ
Measure 5-L5: Traffic Calming ✓	35
Measure 5-L6: Parking Policies ✓	106
Measure 5-L7: Supporting Parking Policy Measures ✓	NQ
Goal 6: Increase Vehicle and Equipment Fuel Efficiency	**10,944**
Measure 6-S1: Pavley Emissions Standards for Passenger Vehicles and the Low Carbon Fuel Standard	10,205
Measure 6-S2: Advanced Clean Cars	329
Measure 6-S3: Assembly Bill 32 Vehicle Efficiency Measures	410
Goal 7: Encourage a Shift Toward Low-Carbon Fuels in Vehicles and Equipment	**453**
Measure 7-S1: Low Carbon Fuel Standard: Off-Road	117
Measure 7-R1: Shift Sonoma County (Electric Vehicles)	335
Measure 7-L1: Electric Vehicle Charging Station Program ✓	1
Measure 7-L3: Reduce Fossil Fuel Use in Equipment through Efficiency or Fuel Switching ✓	NQ
Goal 8: Reduce Idling	**362**
Measure 8-L1: Idling Ordinance ✓	362
Goal 9: Increase Solid Waste Diversion	**751**
Measure 9-R1: Waste Diversion Goal	751
Measure 9-L1: Create Construction and Demolition Reuse and Recycling Ordinance ✓	<1
Goal 10: Increase Capture and Use of Methane from Landfills	**1,168**
Measure 10-R1: Increase Landfill Methane Capture and Use for Energy	1,168
Goal 11: Reduce Water Consumption	**548**
Measure 11-R1: Countywide Water Conservation Support and Incentives	NQ
Measure 11-L1: Senate Bill SB X7-7 - Water Conservation Act of 2009* ✓	548
Goal 12: Increase Recycled Water and Greywater Use	**<1**
Measure 12-R1: Recycled Water*	<1

✓ = Local Measure (otherwise State or Regional)	2020 GHG Reductions
Goal 13: Increase Water and Wastewater Infrastructure Efficiency	**24**
Measure 13-R1: Infrastructure and Water Supply Improvement	10
Measure 13-R2: Wastewater Treatment Equipment Efficiency*	14
Goal 14: Increase Use of Renewable Energy in Water and Wastewater Systems	**227**
Measure 14-L1: Green Energy for Water Production and Wastewater Processing in Healdsburg and Cloverdale* ✓	227
Total State Measures	**16,350**
Total County Measures	**4,780**
Total Local Measures	**2,070**
Grand Total Emissions	**23,200**

*Measures reduce emissions in multiple sectors (i.e. water and energy)
NQ = not quantified

5.1.5 Municipal Greenhouse Gas Reduction Measures

Like the other cities and the county, Cloverdale has recognized the need to reduce GHG emissions from municipal operations. The City has existing programs in place for green municipal buildings and alternative fuels for its municipal fleet. Although municipal GHG reduction measures are not part of this countywide plan, the efforts of local communities are important and will continue in the future. Descriptions of potential municipal GHG reduction measures are provided in Appendix E as an informational resource.